

Release notes for ENDF/B Development n-050\_Sn\_116  
evaluation

**ENDF**  
**B-VII**.dev

April 26, 2017

- checkr Warnings:

1. A previous error halted parsing of the current section  
*MAT=5037, MF= 1, MT=451 (1): Parsing stopped*

```
ERROR(S) FOUND IN MAT=5037, MF= 1, MT=451
SECTION CANNOT BE CHECKED FROM SEQUENCE NUMBER      235 TO      281
```

- checkr Errors:

1. A variable is outside the allowed ENDF range  
*MAT=5037, MF= 1, MT=451 (0): Variable range*

```
ERROR(S) FOUND IN MAT=5037, MF= 1, MT=451
MOD =      1 OUT OF RANGE      0 -      0      RECORD NUMBER      235
```

2. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 2, MT=151 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=5037, MF= 2, MT=151
SECTION 2/151 NOT IN DIRECTORY      RECORD NUMBER      283
```

3. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 1 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 1
SECTION 3/ 1 NOT IN DIRECTORY      RECORD NUMBER      554
```

4. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 2 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 2
SECTION 3/ 2 NOT IN DIRECTORY      RECORD NUMBER      581
```

5. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 4 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 4
SECTION 3/ 4 NOT IN DIRECTORY      RECORD NUMBER      608
```

6. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 16 (0): Directory (b)*

```
ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 16
SECTION 3/ 16 NOT IN DIRECTORY      RECORD NUMBER      622
```

7. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 17 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 17  
SECTION 3/ 17 NOT IN DIRECTORY RECORD NUMBER 632

8. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 22 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 22  
SECTION 3/ 22 NOT IN DIRECTORY RECORD NUMBER 638

9. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 28 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 28  
SECTION 3/ 28 NOT IN DIRECTORY RECORD NUMBER 652

10. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 51 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 51  
SECTION 3/ 51 NOT IN DIRECTORY RECORD NUMBER 663

11. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 52 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 52  
SECTION 3/ 52 NOT IN DIRECTORY RECORD NUMBER 677

12. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 53 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 53  
SECTION 3/ 53 NOT IN DIRECTORY RECORD NUMBER 690

13. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 54 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 54  
SECTION 3/ 54 NOT IN DIRECTORY RECORD NUMBER 702

14. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 55 (0): Directory (b)*

ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 55  
SECTION 3/ 55 NOT IN DIRECTORY RECORD NUMBER 714

15. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 56 (0): Directory (b)*

- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 56 |                   |
| SECTION 3/ 56 NOT IN DIRECTORY            | RECORD NUMBER 725 |
16. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 57 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 57 |                   |
| SECTION 3/ 57 NOT IN DIRECTORY            | RECORD NUMBER 736 |
17. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 58 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 58 |                   |
| SECTION 3/ 58 NOT IN DIRECTORY            | RECORD NUMBER 747 |
18. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 59 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 59 |                   |
| SECTION 3/ 59 NOT IN DIRECTORY            | RECORD NUMBER 757 |
19. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 60 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 60 |                   |
| SECTION 3/ 60 NOT IN DIRECTORY            | RECORD NUMBER 767 |
20. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT= 91 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT= 91 |                   |
| SECTION 3/ 91 NOT IN DIRECTORY            | RECORD NUMBER 777 |
21. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT=102 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT=102 |                   |
| SECTION 3/102 NOT IN DIRECTORY            | RECORD NUMBER 786 |
22. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT=103 (0): Directory (b)*
- |   |                   |
|---|-------------------|
| ERROR(S) FOUND IN MAT=5037, MF= 3, MT=103 |                   |
| SECTION 3/103 NOT IN DIRECTORY            | RECORD NUMBER 807 |
23. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT=104 (0): Directory (b)*

- |  |   |                   |
|--|---|-------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 3, MT=104 |                   |
|  | SECTION 3/104 NOT IN DIRECTORY            | RECORD NUMBER 821 |
24. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT=105 (0): Directory (b)*
- |  |   |                   |
|--|---|-------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 3, MT=105 |                   |
|  | SECTION 3/105 NOT IN DIRECTORY            | RECORD NUMBER 833 |
25. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 3, MT=107 (0): Directory (b)*
- |  |   |                   |
|--|---|-------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 3, MT=107 |                   |
|  | SECTION 3/107 NOT IN DIRECTORY            | RECORD NUMBER 843 |
26. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 2 (0): Directory (b)*
- |  |  |                   |
|--|--|-------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 2 |                   |
|  | SECTION 4/ 2 NOT IN DIRECTORY            | RECORD NUMBER 860 |
27. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 16 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 16 |                    |
|  | SECTION 4/ 16 NOT IN DIRECTORY            | RECORD NUMBER 1033 |
28. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 17 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 17 |                    |
|  | SECTION 4/ 17 NOT IN DIRECTORY            | RECORD NUMBER 1044 |
29. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 22 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 22 |                    |
|  | SECTION 4/ 22 NOT IN DIRECTORY            | RECORD NUMBER 1055 |
30. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 28 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 28 |                    |
|  | SECTION 4/ 28 NOT IN DIRECTORY            | RECORD NUMBER 1066 |
31. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 51 (0): Directory (b)*

- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 51 | RECORD NUMBER | 1077 |
| SECTION 4/ 51 NOT IN DIRECTORY            |               |      |
32. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 52 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 52 | RECORD NUMBER | 1100 |
| SECTION 4/ 52 NOT IN DIRECTORY            |               |      |
33. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 53 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 53 | RECORD NUMBER | 1123 |
| SECTION 4/ 53 NOT IN DIRECTORY            |               |      |
34. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 54 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 54 | RECORD NUMBER | 1146 |
| SECTION 4/ 54 NOT IN DIRECTORY            |               |      |
35. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 55 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 55 | RECORD NUMBER | 1169 |
| SECTION 4/ 55 NOT IN DIRECTORY            |               |      |
36. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 56 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 56 | RECORD NUMBER | 1192 |
| SECTION 4/ 56 NOT IN DIRECTORY            |               |      |
37. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 57 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 57 | RECORD NUMBER | 1215 |
| SECTION 4/ 57 NOT IN DIRECTORY            |               |      |
38. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 58 (0): Directory (b)*
- |   |               |      |
|---|---------------|------|
| ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 58 | RECORD NUMBER | 1238 |
| SECTION 4/ 58 NOT IN DIRECTORY            |               |      |
39. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 59 (0): Directory (b)*

- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 59 |                    |
|  | SECTION 4/ 59 NOT IN DIRECTORY            | RECORD NUMBER 1261 |
40. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 60 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 60 |                    |
|  | SECTION 4/ 60 NOT IN DIRECTORY            | RECORD NUMBER 1284 |
41. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 4, MT= 91 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 4, MT= 91 |                    |
|  | SECTION 4/ 91 NOT IN DIRECTORY            | RECORD NUMBER 1307 |
42. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 5, MT= 16 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 5, MT= 16 |                    |
|  | SECTION 5/ 16 NOT IN DIRECTORY            | RECORD NUMBER 1331 |
43. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 5, MT= 17 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 5, MT= 17 |                    |
|  | SECTION 5/ 17 NOT IN DIRECTORY            | RECORD NUMBER 1388 |
44. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 5, MT= 22 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 5, MT= 22 |                    |
|  | SECTION 5/ 22 NOT IN DIRECTORY            | RECORD NUMBER 1411 |
45. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 5, MT= 28 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 5, MT= 28 |                    |
|  | SECTION 5/ 28 NOT IN DIRECTORY            | RECORD NUMBER 1603 |
46. Missing a section in directory so your directory is messed up. This error will break everything else  
*MAT=5037, MF= 5, MT= 91 (0): Directory (b)*
- |  |   |                    |
|--|---|--------------------|
|  | ERROR(S) FOUND IN MAT=5037, MF= 5, MT= 91 |                    |
|  | SECTION 5/ 91 NOT IN DIRECTORY            | RECORD NUMBER 1705 |

• **psyche** Warnings:

- Gamma width not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ISOTOPE MASS = 116. L = 1 / AT RESONANCE ENERGY 2.91860E+04 EV. THE GAMMA WIDTH 2.35000E-02 DEVIATES TOO MUCH FROM THE AVERAGE 7.72824E-02 (0): Gamma width*

```

FILE 2
SECTION 151
ISOTOPE MASS = 116. L = 1
AT RESONANCE ENERGY 2.91860E+04 EV. THE GAMMA WIDTH 2.35000E-02 DEVIATES TOO MUCH FROM THE AV

```

- groupeie Errors:

1. Very small elastic cross section found  
*0: Small elastic*

Multi-Group and Multi-Band Parameters from ENDF/B Data (GROUPEIE 2015-2)

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ENDF/B Input and Output Data Filenames

ENDFB.IN

ENDFB.OUT

... [97 more lines]

- fudge-4.0 Warnings:

1. Missing a channel with a particular angular momenta combination  
*resonances / resolved / MultiLevel\_BreitWigner (Error # 0): missingResonanceChannel*

WARNING: Missing a channel with angular momenta combination L = 0, J = 1.5 and S = 1.5 for "capture"

WARNING: Missing a channel with angular momenta combination L = 1, J = 0.5 and S = 1.5 for "capture"

WARNING: Missing a channel with angular momenta combination L = 1, J = 1.5 and S = 1.5 for "capture"

WARNING: Missing a channel with angular momenta combination L = 1, J = 2.5 and S = 1.5 for "capture"

2. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 0: total (Error # 0): CS Sum.*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.25%

3. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 1: (z,n) (Error # 0): CS Sum.*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 0.12%

- fudge-4.0 Errors:

1. Calculated and tabulated Q values disagree.  
*reaction label 12: n[multiplicity:'2'] + Sn115 (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -9647022.493865967 eV vs -9567090. eV!

2. Calculated and tabulated Q values disagree.  
*reaction label 13: n[multiplicity:'3'] + Sn114 (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -17193416.9460144 eV vs -1.71183e7 eV!

3. Calculated and tabulated Q values disagree.  
*reaction label 14: n + H1 + In115 (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -9364037.704269409 eV vs -9278730. eV!

4. Calculated and tabulated Q values disagree.  
*reaction label 15: Sn117 + gamma (Error # 0): Q mismatch*



WARNING: Calculated and tabulated Q-values disagree: 6859585.280471802 eV vs 6944190. eV!

5. Calculated and tabulated Q values disagree.  
*reaction label 16:  $n + \text{He4} + \text{Cd112}$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -3456080.565979004 eV vs -3370090. eV!

6. Calculated and tabulated Q values disagree.  
*reaction label 17:  $\text{H1} + \text{In116-s}$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -2579317.550888062 eV vs -2490640. eV!

7. Calculated and tabulated Q values disagree.  
*reaction label 18:  $\text{H2} + \text{In115-s}$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -7139471.60333252 eV vs -6968610. eV!

8. Calculated and tabulated Q values disagree.  
*reaction label 19:  $\text{H3} + \text{In114-s}$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -9918017.576461792 eV vs -9824560. eV!

9. Calculated and tabulated Q values disagree.  
*reaction label 20:  $\text{He4} + \text{Cd113-s}$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 3083997.579849243 eV vs 3178410. eV!

• njoy2012 Warnings:

1. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*group...compute self-shielded group-averaged cross-sections (0): GROUPT/conver (0)*

---message from conver---cannot do complete particle production for mt= 16  
only mf4/mf5 provided

2. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*group...compute self-shielded group-averaged cross-sections (1): GROUPT/conver (0)*

---message from conver---cannot do complete particle production for mt= 17  
only mf4/mf5 provided

3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*group...compute self-shielded group-averaged cross-sections (2): GROUPT/conver (0)*

---message from conver---cannot do complete particle production for mt= 22  
only mf4/mf5 provided

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)*

```
---message from conver---cannot do complete particle production for mt= 28  
only mf4/mf5 provided
```

5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)*

```
---message from conver---cannot do complete particle production for mt= 91  
only mf4/mf5 provided
```